Data Center. In case of dispute maps will be used to determine the correct value.

§ 80.759 Average terrain elevation.

(a)(1) Draw radials from the antenna site for each 45 degrees of azimuth starting with true north. Any such radial which extends entirely over land from the antenna site to the point of +17 dBu field strength need not be drawn.

(2) If the distance from the antenna site to the point of +17 dBu field strength between any of the 45 degrees radials would be less than the distances calculated along these radials, an additional radial between such adjacent radials must be plotted and calculations made in each case. Each additional radial must be that radial along which it appears by inspection that transmission loss would be greatest.

(b) Draw a circle of 16 km (10 statute mile) radius using the antenna site as the center. Divide each radial into 320 meter (0.2 statute mile) increments inside the circumference to the 3.2 km (2 statute mile) point.

(c) Calculate the height above sea level of each 320 meter (0.2 statute mile) division by interpolating the contour intervals of the map, and record the value.

(d) Average the values by adding them and dividing by the number of readings along each radial.

(e) Calculate the height above average terrain by averaging the values calculated for each radial.

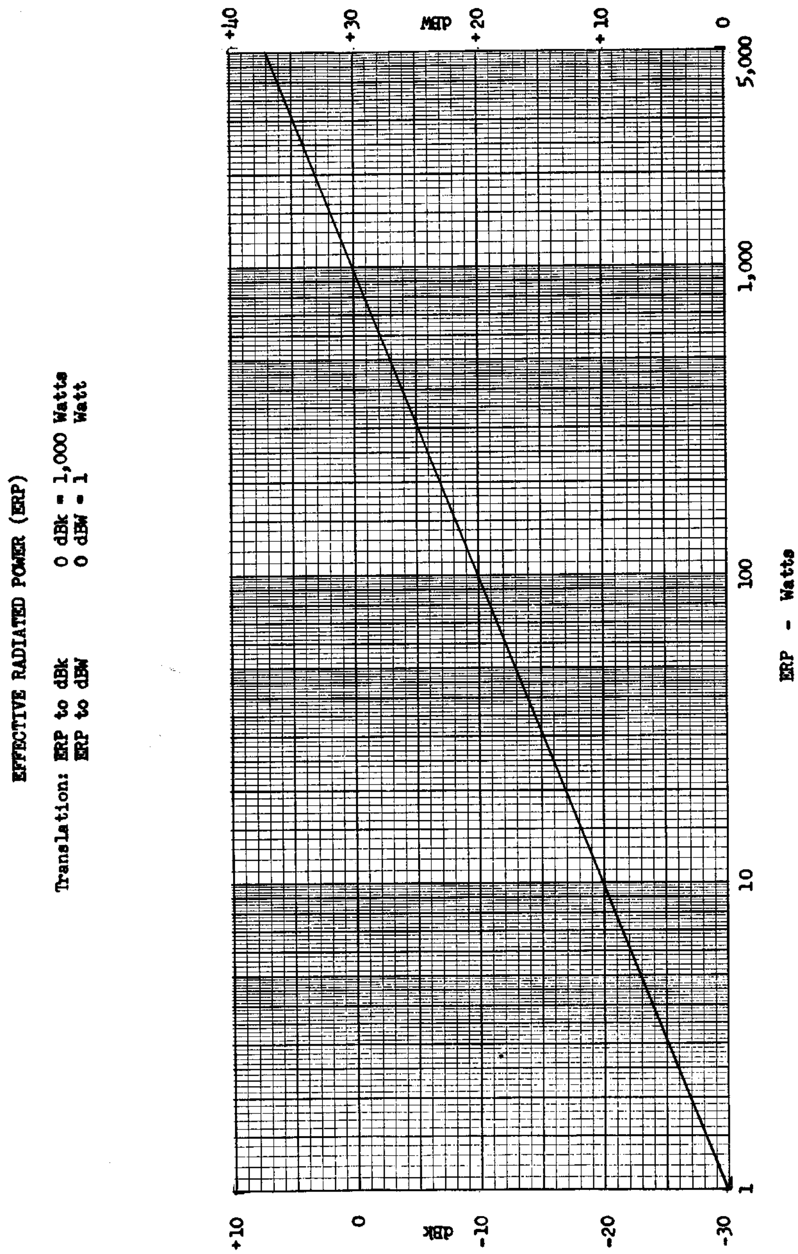
[51 FR 31213, Sept. 2, 1986, as amended at 58 FR 44953, Aug. 25, 1993]

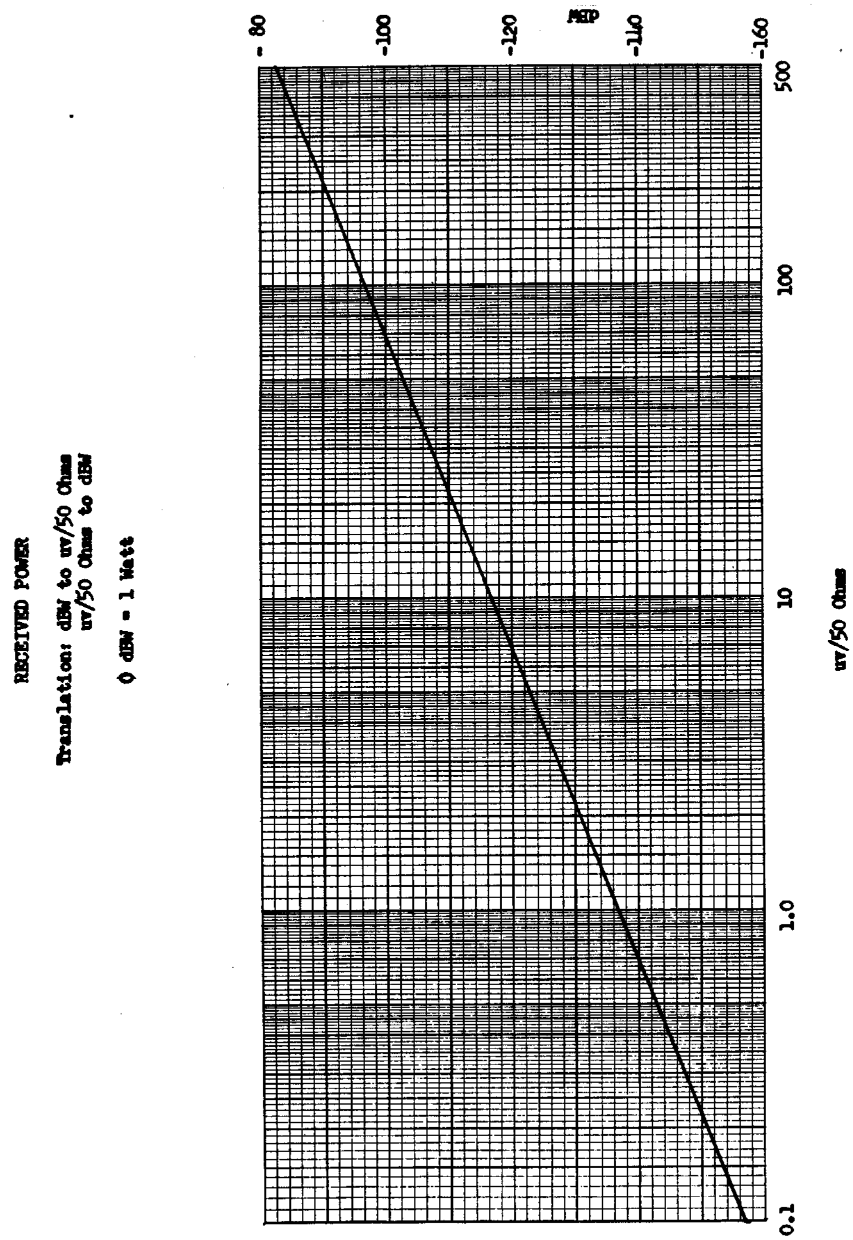
§ 80.761 Conversion graphs.

The following graphs must be employed where conversion from one to the other of the indicated types of units is required.

(a) *Graph 1.* To convert effective radiated power in watts to dBk or to dBW, find the power in watts on the horizontal axis. Move vertically along the line representing the power to the diagonal line. Move horizontally from the diagonal to the right side to read dBW and to the left to read dBk.

(b) *Graph 2.* To convert microvolts across 50 ohms to received power in dBW, find the signal in microvolts on the horizontal axis. Move vertically to the diagonal line, then move right horizontally to read dBW.


EFFECTIVE RADIATED POWER (ERP)
Translation: ERP to dBk 0 dBk = 1,000 Watts
ERP to dBW 0 dBW = 1 Watt
dBW
+40
+30
+20
+10
0
dBk
+10
0
-10
-20
-30
ERP - Watts
1
10
100
1,000
5,000


RECEIVED POWER
Translation: dBW to uv/50 Ohms
uv/50 Ohms to dBW
0 dBW = 1 Watt
- 80
-100
-120
-140
-160
500
100
10
1.0
0.1
uv/50 Ohms

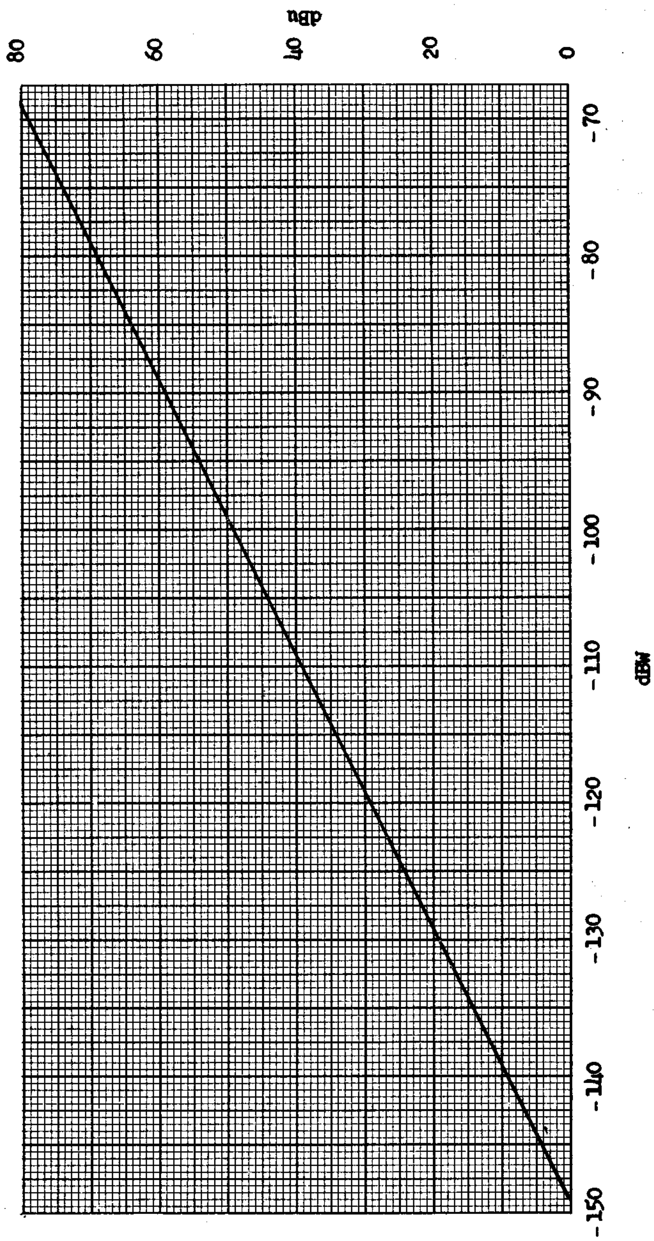
(c) *Graph 3.* To convert received power in dBW to field intensity in dBu find the received power in dBW on the horizontal axis. Move vertically to the diagonal line, then move right horizontally to read dBu.

FIELD INTENSITY VS RECEIVED POWER

For Half-Wave Dipole

Received Power in uv/50 Ohms

0 dBW = 1 Watt
0 dBu = 1 microvolt /meter



§80.763 Effective antenna height.

The effective height of the antenna is the vertical distance between the center of the radiating system above the mean sea level and the average terrain elevation.

§80.765 Effective radiated power.

Effective radiated power is used in computing the service area contour. The effective radiated power is derived from the transmitter output power, loss in the transmission system including duplexers, cavities, circulators, switches and filters, and the gain relative to a half-wave dipole of the antenna system.

§80.767 Propagation curve.

The propagation graph, §80.767 Graph 1, must be used in computing the service area contour. The graph provides data for field strengths in dBu for an effective radiated power of 1 kW, over sea water, fresh water or land (smooth earth); transmitting antena heights of 4,800, 3,200, 1,600, 800, 400, 200, and 100 feet; based on a receiving antenna height of 9 meters (30 feet), for the 156–162 MHz band. The use of this is described in this section.

(a) Calculate the effective radiated power of the coast station, Ps in dB referred to 1 kW (dBk), as follows:

$$P_s = Pt + G - L$$

where,

Pt=Transmitter output power in dB referred to 1 kW: Transmitter output power in watts is converted to dBk by Pt=10 [log10 (Power in watts)] − 30. Also see §80.761 Graph 1 for a conversion graph.

G=Antenna gain in dB referred to a standard half-wave dipole, in the direction of each plotted radial, and

L=Line losses between the transmitter and the antenna, in dB.

NOTES:

1. To determine field strengths where the distance is known, for effective radiated powers other than 1kW (0 dBk): Enter the graph from the ‘‘statute miles’’ scale at the known distance, read up to intersection with the curve for the antenna height, read left to the ‘‘dBu for 1 kW radiated’’ scale and note the referenced field strength (Fe). The value of the actual field strength (F) in dBu will be F=Fe+Ps where Ps is the effective radiated power calculated above.

2. To determine distance, where the actual field strength is specified, for effective radiated powers other than 0 dBk: The value of the field referenced strength will be Fe=F − Ps in dBu. Enter the graph, from the ‘‘dBu for 1 kW radiated’’ scale at the corrected value of Fe, read right to intersection with the antenna height, read down to ‘‘statute miles’’ scale.

(b) Determine the antenna height. For antenna heights between the heights for which this graph is drawn, use linear interpolation; assume linear height-gain for antennas higher than 4,800 feet.

(c) For receiver antenna heights lower than 9 meters (30 feet), assume that the field strength is the same as at 9 meters (30 feet).

(d) Assume that propagation over fresh water or over land is the same as that over sea water.